Optics Review

Key Terms:   
Incandescence Fluorescence Luminescence Phosphorescence   
Chemiluminescence Bioluminescence wavelength reflection  
medium ray incident ray reflected ray  
angle of incidence angle of reflections normal plane mirror  
concave convex principal axis focal point  
focal length

Apart from the key terms above, you should know the following from chapter 10

From Chapter 10.1

* know all the different types of light
* know how electric discharge works
* understand the process of how an excited atom produces light (electron jumping up a shell)
* know light is an electromagnetic wave and how we can only see certain wavelengths

From Chapter 10.2

* know that light travels in a straight line called a ray
* know how to use rays and the law of reflection to draw an image using ray diagrams
* know the four characteristics of images (location, orientation, size and type)
* know the difference between virtual image and a real image

From Chapter 10.3 and 10.4

* know how to draw ray diagrams to determine where the image is in curved mirrors
* know how to use the mirror equation
* know how to use the magnification equation

Equations:

Mirror Equation:

Magnification Equation:

Key Terms:   
refraction refracted ray angle of refraction index of refraction  
partial reflection and refraction critical angle total internal reflection  
rainbow apparent depth shimmering mirage  
Temperature Inversion

Apart from the key terms above, you should know the following from chapter 11

From Chapter 11.1

* know what refraction is
* know how the speed of light in a medium causes it to bend (including which way it bends)
* know Fermat's Principle
* know how to use the index of refraction

From Chapter 11.2

* know what is different about light going from a slow medium to a fast medium
* know how to calculate the critical angle
* know how to describe total internal reflection and when it occurs
* know the uses discussed in this section about internal reflection

From Chapter 11.3

* know how a rainbow is produced (be able to draw the diagram)
* know how apparent depth influences what we see
* know how changes in the temperature of water results in shimmering, mirages and temperature inversions

Equations:

index of refraction:  
  
 c = 3.0 x 108 m/s

Key Terms:   
lens converging lens diverging lens spherical aberration   
chromatic aberration objective lens eyepiece cornea  
retina myopia hyperopia presbyopia  
astigmatism night-vision

Apart from the key terms above, you should know the following from chapter 11

From Chapter 12.1

* know what a lens is
* know the difference between converging and diverging lenses
* know spherical and chromatic aberration

From Chapter 12.2

* know how to draw ray diagrams of converging lenses and diverging lenses
* know how to use the thin lens and magnification equations

From Chapter 12.3

* know how telescopes and microscopes work
* know how the human eye works
* know the different names for poor vision and why they occur
* know how night vision goggles work

Equations:

Thin Lens Equation:

Magnification Equation:

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